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Effects of self medication programme on knowledge of drugs and compliance with treatment in elderly patients

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Abstract

***Objective*—To determine whether a programme of self medication for inpatients improves compliance with treatment and knowledge of their drugs after discharge from hospital.**

***Design*—Patients were prospectively recruited from four wards: two with a self medication programme and two acting as controls. Ten days after discharge the patients were visited at home. They were questioned about their drugs, and a tablet count was undertaken.**

***Setting*—The pharmacy department and four medical wards with an interest in elderly patients at a district general hospital, and the patients' homes.**

***Patients*—88 patients discharged to their own homes who were regularly taking one or more drugs.**

***Intervention*—A hospital self medication programme in which patients are educated about their medicines and given increasing responsibility for taking them in hospital.**

***Main outcome measure*—Compliance with and knowledge of the purpose of their medicines 10 days after discharge from hospital.**

***Results*—The mean compliance score in patients taking part in the self medication programme was 95% compared with 83% in the control group (difference 12%, 95% confidence interval 4% to 21%; $P<0{\cdot}02$). Of the patients in the self medication group, 90% (38/42) knew the purpose of their drugs compared with 46% (17/37) in the control group (difference 44%, 26% to 63%; $P<0{\cdot}001$).**

***Conclusion*—A self medication programme is an effective aid for improving compliance with and knowledge of patients' drugs after discharge.**

Introduction

It is widely known that patients, including elderly patients, do not always comply with their drug treatment. Many authors have attempted to measure the extent to which this occurs,[1-3] and in a recent review Wright concluded that compliance was about 50%.[4] This clearly has an effect on morbidity, with many patients receiving suboptimal treatment. The financial cost of non-compliance also needs to be considered. Many strategies have been suggested to improve compliance. These include simplifying medication regimens,[5] providing written and verbal information,[6,7] and more appropriate packaging of drugs.[8] Self medication in hospital has also been suggested as a way of improving compliance on discharge.[9-11] A scheme of self medication allows patients to give themselves their drugs in hospital after education.

There are few data evaluating the benefits of self medication; previous studies have been small and gave conflicting results.[12,13] We report the effect of such a programme on patients' compliance and knowledge of

drugs compared with the results of standard administration of medicines by nurses.

Subjects and methods

STUDY POPULATION

The study took place in two pairs of medical wards with an interest in elderly patients. One of each of these pairs was randomly allocated to the self medication programme and the others to act as controls with standard administration of medicines by nurses. Before the study we compared the four wards and found them similar for age of patients, length of stay, type of illness, and social circumstances of the patient. We selected consecutive admissions of patients who were taking one or more drugs and who were to be responsible for administering their own drugs on discharge. We excluded patients who were being discharged to a nursing home or other institution, were dependent on another person for taking their medicines, or were terminally ill. Verbal consent was obtained from patients in both groups.

On admission, eligible patients on all four wards were referred to the pharmacist (CJL) by their primary nurse. The pharmacist compiled a drug history for each patient and discussed this with the medical team. The drug regimen was simplified to daily or twice daily administration when possible, and all unnecessary medication was stopped. The times of drug administration were linked to daily events—for example, meal times.

At this point patients in the self medication group entered the programme, and those in the control group received no further input from the pharmacist. In the control arm of the study, patients were given their medicines by the nurse during the set drug rounds each day. Before discharge the primary nurse explained the control patients' medication to them and filled in a drug reminder chart.

SELF MEDICATION PROGRAMME

The patients in the self medication group were asked for additional written consent, necessary when patients are to take responsibility for their medicines while in hospital. Initially, the patient was assessed by the pharmacist and primary nurse by using a standard assessment sheet which covered understanding of medication; ability to read labels; and ability to open closures.

The pharmacist discussed the medicines with the patients and filled in a drug reminder chart for them. This was based on a previously described computer generated chart.[6] In this study, an extra column for the purpose of each medicine was included, and the chart was completed by hand.

The medications were then dispensed by using bottles and print size appropriate to individual needs. The bottles were fully labelled as if the patient was going home. The medication was initially kept together in a box labelled with the patient's name in the drug trolley on the ward.

The programme had three stages, each associated with increasing levels of independence. Firstly, during regular medication rounds the primary nurse handed patients the box containing their individually labelled medicines. Patients were directly supervised while taking the medication with the nurse intervening only if patients were about to make mistakes. Secondly, the patients were then expected to request their medication at the appropriate time. Half an hour was allowed to elapse before the nurse reminded patients. Thirdly, the patients had total responsibility for taking their medications, which were stored in secure lockers beside their beds. A nurse performed a daily tablet count.

DISCHARGE PROCEDURE

The investigator (EAC) saw all patients before discharge to arrange a home visit about 10 days later. A short questionnaire was completed for each patient, which recorded sociological data. The pharmacy dispensed a two week supply of drugs for each patient, with a duplicate retained in pharmacy. The investigator took the duplicate supply out to the patient on the 10 day visit.

ASSESSMENT OF PATIENTS' COMPLIANCE AND KNOWLEDGE OF MEDICATION

The investigator visited the patients at home about 10 days after discharge to conduct a structured interview and tablet count. A compliance score was calculated for each medicine (the number of tablets taken divided by the correct number and expressed as a percentage) and a mean compliance score was calculated for each patient. A tablet count was used as it is the only practical method when large numbers of patients taking a wide variety of medicines are investigated. Tablet counts, like all indirect methods of measuring compliance, have their drawbacks. The main problems are that the patient might take drugs from other bottles at home or might adjust the number of tablets in the bottles. We took the following steps to reduce this. The patients were not given any clues that there would be a tablet count. They were told not to use any drugs already at home and that they would not need to get a further supply from their general practitioner as the investigator would be bringing a further two week supply out to them. We gave patients more than 10 days' supply of tablets, making it more difficult to adjust the contents just before the visit. As we were visiting the patients at home there was less opportunity for patients to claim to have forgotten or lost their bottles.

The investigator asked the patient about the purpose of each medicine and recorded this verbatim. The self medication group were also asked specific questions about their opinion of the programme.

The groups were compared for overall mean compliance score by using the Mann-Whitney U test. The numbers of patients who knew the purpose of their drugs were compared by using the χ^2 test. Confidence intervals were calculated with the confidence interval analysis programme.[14]

Results

Of the 88 patients recruited into the study, 45 were self medicating and 43 were control patients. There were nine patients who dropped out: three who were readmitted (two active and one control), two who were not traceable (both control), one who had started using a Dosett box (control), and three for whom a spouse had assumed full control of their medication (one active and two control). This left 79 patients (42 self medicating and 37 control). In a further six patients (three active and three control) it was not possible to complete a tablet count. (Reasons for this include patients mixing their tablets together, patients using tablets supplied by the general practitioner, and a spouse assuming control of their medicines.) The two groups were well matched for age, sex, social circumstances, length of stay, number and frequency of doses of medicines taken, and time to home visit (tables I and II).

The mean compliance score for patients in the self medicating group was 95% compared with 83% in the control group (difference 12%, 95% confidence interval 4% to 21%; $P<0{\cdot}02$). The number of patients who knew the purpose of their medicines in the self medicating group was 38/42 (90%) compared with

TABLE I—*Details of patients in self medication and control groups*

Detail	Self medication		Control	
	No followed up (n=42)	No who dropped out (n=3)	No followed up (n=37)	No who dropped out (n=6)
Mean (range) age (years)	77 (57-96)	79 (70-89)	79 (59-93)	83 (71-89)
No of men	11	3	12	4
No living with spouse or relative	19	2	15	4
Mean length of stay (days)	17	20	16	21
Median No of medicines	4	4	4	4
Mean time to visit	10	NA	9	NA
Mean score on abbreviated mental test	10	10	10	9

NA=not applicable.

TABLE II—*Numbers of times during each day when patients had medicines to take (maximum of four: breakfast, lunch time, evening meal, and bedtime)*

No of dose taking times each day	Self medication		Control	
	No followed up (n=42)	No who dropped out (n=3)	No followed up (n=37)	No who dropped out (n=6)
Once	9		6	
Twice	15		10	3
Three times	5	2	8	1
Four times	13	1	13	2
Mean	2·5	2·7	2·8	2·8

17/37 (46%) in the control group (difference 44%, 29% to 63%; $P<0.001$).

When patients in the self medication group were asked specific questions about their opinion of the programme, 40 (95%) said that they would prefer to give themselves the drugs instead of the nurse giving them. Also 37 (88%) patients felt that it helped them feel more in control of their medicines. When asked, 18 (43%) said that they felt more confident taking their medicines at home as a result of the programme, and 18 (43%) said that it had increased their understanding of their drug treatment.

Discussion

This study shows that a self medication programme results in significantly superior compliance and knowledge of the purpose of the medicines at 10 days after discharge. Our findings were similar to those of Wood *et al*, who found that a self medication programme significantly improved patient compliance two weeks after discharge from hospital.[12] In that study, compliance (also measured by tablet count) was measured in bands: those making no errors in medication, those making a small error, and those considered to be non-compliers. The number of self medicating patients who made no errors was significantly greater than that in the control group. Foster *et al* found that a self medication programme marginally improved compliance when compared with controls (99% *v* 94%).[13] This difference was not significant, possibly as a result of the small numbers (46 patients) who were taking an average of three drugs (four in our study).

Key messages

- Self medication is a practical method of administering medicines for elderly patients on medical wards
- It results in significantly higher levels of compliance after discharge
- A small but significant increase in resources is required
- Most (95%) patients preferred self medication to administration of medicines by nurses in hospital

Overall, the compliance scores achieved by both groups in our study were relatively high. This may be because patients in both groups had their regimen rationalised and were provided with remainder charts. When rationalising the medication we linked administration times to daily events, known to be important in improving compliance.[6,15]

Almost all the patients who gave themselves their medicines preferred this method to the usual administration by nurses, feeling that it gave them more control of their medicine taking. This is in line with the patient's charter and the move generally to empower patients. Over 40% of patients felt more confident about taking their medicines when at home, and the same number thought that it had increased their understanding. This was confirmed by the fact that 90% of self medicating patients knew the purpose of their medicines compared with 46% in the control group.

A self medication programme requires additional staff time. The ward and pharmacy staff need to be trained to administer the programme effectively and consistently. Initially, each patient takes up more nursing time. Later on when the patient is completely independent the time requirement is less than normal. Overall, the change in time commitment for nursing staff is neutral. There is an increased contribution from the pharmacist in assessment and counselling and additional staff time for the individualised inpatient dispensing. The cost of funding this small net increase in staff time can logically be funded by purchasers (whether health authority or general practice fundholder) through the contracting process. This can be justified as the study has shown that considerable benefits for the patient (in terms of compliance, knowledge, and empowerment) are apparent once the patient is back in the community.

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Correction

Health and cancer prevention: knowledge and beliefs of children and young people

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